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41505	7590	12/13/2005	EXAMINER	
WOODCOCK WASHBURN LLP (MICROSOFT CORPORATION)			KIM, PAUL	
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PHILADELPHIA, PA 19103			ART UNIT	PAPER NUMBER
			2161	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/607,087

Applicant(s)

TKACHUK ET AL.

Examiner

Paul Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 26, 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


SAM RIMELL
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 26 June 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. This action is responsive to the following communication: Original Application filed on June 26, 2003.
2. Claims 1-19 are pending. Claims 1, 8 and 14 are independent.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

- In paragraph 0026, elements 127, a hard disk drive, and 128, a magnetic disk drive, are mentioned but have not been included in the drawings, specifically Figure 1.
- In paragraph 0028, elements 138, program data, and 148, a video adapter, are mentioned but have not been included in the drawings, specifically Figure 1.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4)

because:

- In Figure 1, reference character “125” has been used to designate both “RAM” and “Floppy Drive”.
- In Figure 1, reference character “135” has been used to designate both “Prog. Data” and “OS”.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. **Claims 1-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill et al (U.S. Patent No. 6,453,321, hereinafter referred to as HILL), filed on February 11, 1999, and issued on September 17, 2002, in view of Lore et al (U.S. Patent No. 6,163,774, hereinafter referred to as LORE), filed on May 24, 1999, and issued on December 19, 2000.

HILL teaches a method of creating and using a structured cache, and generating cache indexes.

HILL differs from the claimed invention in that HILL does not disclose a method wherein indexes include data for a measure over a certain selected range of attributes common to a first data and a second data type; wherein an arithmetic operation is performed on the data; and wherein the resulting data is aggregated (claim 1).

7. Regarding **independent claims 1 and 14**, HILL, in combination with LORE, discloses:

A method (also a computer readable medium) for calculating a measure expression over a selected range of attributes, the measure expression including relationship between a first measure and a second measure, the first measure corresponding to a first data type and the second measure corresponding to a second data type, the relationship defined by an arithmetic operation, the method comprising:

retrieving a first cache corresponding to the first data type, the first cache including data {See HILL, col. 4, lines 19-29, wherein this reads over "creating and using a structured cache in a computer system . . . [by] retrieving a result set from said database in response to a database query, said result comprising one or more rows of data elements; creating a data cache from said retrieved result set"; and col. 4, lines 36-37, wherein this reads over "locating an entry corresponding to said object in said data cache"} for the first measure {See LORE, col. 1, lines 28-30, wherein this reads over "[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of

measures which represents the transactional data"} over the selected range {See LORE, col. 8, lines 36-54, wherein this reads over "a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of 'food'"} of attributes {See LORE, col. 1, lines 25-28, wherein this reads over "[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes"};

While LORE does not disclose the use of cache, LORE discloses a method of defining levels to be used in aggregation of data in a database having one or more dimensions. These levels are defined corresponding to attributes and measures in the dimension. Furthermore, the application of a "WHERE condition" {See LORE, col. 8, lines 48-54} to the levels for the retrieval of a first cache which includes data for a measure over a selected range of attributes. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to select a specific cache which included data for a specific range of attributes.

generating a first index from the first cache {See HILL, col. 10, lines 53-61, wherein this reads over "[t]he object cache 400 includes and index 402 . . . [wherein] as each object is instantiated, its object identifier is registered in this index . . . The cache index 402 stores entries comprising object identifiers"}, the first index including data for the first measure {See LORE, col. 1, lines 28-30, wherein this reads over "[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of measures which represents the transactional data"} over the selected range of attributes {See LORE, col. 1, lines 25-28, wherein this reads over "[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes"} common to the first data type and the second data type {See LORE, col. 8, lines 36-54, wherein this reads over "a level rule [wherein] an aggregate record will be generated for each

distinct combination of brand, manufacture, and price with a category of 'food'"; and col. 2, lines 22-25, wherein this reads over "[t]he aggregates required in the output fact data are specified by a combination of levels, one from each dimension, [which] is also referred as a cross product of levels";

While LORE does not disclose the generation of an index from a cache, LORE discloses a method of defining levels to be used in aggregation of data in a database having one or more dimensions. These levels are defined corresponding to attributes and measures in the dimension. Furthermore, LORE discloses a method wherein a cross product of levels may be used to identify a selected range of attributes common to both the first data type and the second data type. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to hold data for the measure over a selected range of attributes.

retrieving a second cache corresponding to the second data type, the second cache including data {See HILL, col. 4, lines 19-29, wherein this reads over "creating and using a structured cache in a computer system . . . [by] retrieving a result set from said database in response to a database query, said result comprising one or more rows of data elements; creating a data cache from said retrieved result set"; and col. 4, lines 36-37, wherein this reads over "locating an entry corresponding to said object in said data cache"} for the second measure {See LORE, col. 1, lines 28-30, wherein this reads over "[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of measures which represents the transactional data"} over the selected range {See LORE, col. 8, lines 36-54, wherein this reads over "a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of 'food'"} of attributes {See LORE, col. 1, lines 25-28, wherein this reads over "[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes"};

While LORE does not disclose the use of cache, LORE discloses a method of defining levels to be used in aggregation of data in a database having one or more dimensions. These levels are defined corresponding to attributes and measures in the dimension. Furthermore, the application of a “WHERE condition” {See LORE, col. 8, lines 48-54} to the levels for the retrieval of a first cache which includes data for a measure over a selected range of attributes. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to select a specific cache which included data for a specific range of attributes.

generating a second index from the second cache {See HILL, col. 10, lines 53-61, wherein this reads over “[t]he object cache 400 includes and index 402 . . . [wherein] as each object is instantiated, its object identifier is registered in this index . . . The cache index 402 stores entries comprising object identifiers”}, the second index including data for the second measure {See LORE, col. 1, lines 28-30, wherein this reads over “[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of measures which represents the transactional data”} over the selected range {See LORE, col. 8, lines 36-54, wherein this reads over “a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of ‘food’”} of attributes {See LORE, col. 1, lines 25-28, wherein this reads over “[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes”} common to the first data type and the second data type {See LORE, col. 8, lines 36-54, wherein this reads over “a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of ‘food’”; and col. 2, lines 22-25, wherein this reads over “[t]he aggregates required in the output fact data are specified by a combination of levels, one from each dimension, [which] is also referred as a cross product of levels”};

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While LORE does not disclose the generation of an index from a cache, LORE discloses a method of defining levels to be used in aggregation of data in a database having one or more dimensions. These levels are defined corresponding to attributes and measures in the dimension. Furthermore, LORE discloses a method wherein a cross product of levels may be used to identify a selected range of attributes common to both the first data type and the second data type. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to hold data for the measure over a selected range of attributes.

performing the arithmetic operation {See LORE, col. 21, line 57 through col. 22, line 15, wherein this reads over "Arithmetic Operations . . . perform the calculation and return the resulting numeric value"} on the data for the first measure from the first index and the data for the second measure {See LORE, col. 1, lines 28-30, wherein this reads over "[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of measures which represents the transactional data"} from the second index to achieve resulting data; and

While HILL does not disclose the use of an arithmetic operation on data, the invention disclosed in LORE discloses multiple arithmetic operations which may be performed on the data for measures, and thereafter returning a result in numeric value format. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

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One of ordinary skill in the art would have been motivated to do this modification in order calculate measures such as those disclosed in the claimed invention (e.g. “US Sales” and “Exchange Rate”).

aggregating the resulting data over the selected range {See LORE, col. 8, lines 36-54, wherein this reads over “a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of ‘food’”} of attributes {See LORE, col. 1, lines 25-28, wherein this reads over “[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes”} common to the first data type and the second data type {See LORE, col. 8, lines 36-54, wherein this reads over “a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of ‘food’”; and col. 2, lines 22-25, wherein this reads over “[t]he aggregates required in the output fact data are specified by a combination of levels, one from each dimension, [which] is also referred as a cross product of levels”}.

While HILL does not disclose a method of aggregating the resulting data over a selected range, LORE discloses a method of aggregating data. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE

One of ordinary skill in the art would have been motivated to do this modification because the aggregation of the resulting data would allow for the production of results for a broader selected range such as those disclosed in the claimed invention (e.g. aggregating the results from monthly data to calculate a result for the quarter).

8. Regarding **dependent claims 2-3, 9-10, and 15-16**, HILL, in combination with LORE, discloses a method (also a system and computer readable medium) wherein retrieving the cache comprises retrieving the cache {See HILL, col. 4, lines 19-29,

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wherein this reads over “creating and using a structured cache in a computer system . . . [by] retrieving a result set from said database in response to a database query, said result comprising one or more rows of data elements; creating a data cache from said retrieved result set”; and col. 4, lines 36-37, wherein this reads over “locating an entry corresponding to said object in said data cache”} through a single access to a data table {See HILL, col. 1, lines 54-67, wherein this reads over “[t]he application retrieves data from these tables by issue a database query”}.

The combination of the inventions disclosed in HILL and LORE would allow for the retrieval of cache through a single access to a data table. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to increase the efficiency of read persistent objects from a database. Furthermore, one of ordinary skill in the art would have been motivated to do this modification so that the cache may be available in the generation of an index.

9. Regarding **dependent claims 4-5, 11-12 and 17-18**, HILL, in combination with LORE, discloses a method (also a system and computer readable medium) wherein generating the index (also the computer executable instructions for generating the first index) comprises generating the index {See HILL, col. 10, lines 53-61, wherein this reads over “[t]he object cache 400 includes and index 402 . . . [wherein] as each object is instantiated, its object identifier is registered in this index . . . The cache index 402 stores entries comprising object identifiers”} including data for the measure {See LORE, col. 1,

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lines 28-30, wherein this reads over “[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of measures which represents the transactional data”} aggregated {See LORE, col. 8, lines 36-54, wherein this reads over “a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of ‘food’”} according to attributes specific to the data type {See LORE, col. 1, lines 25-28, wherein this reads over “[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes”}.

The combination of the inventions disclosed in HILL and LORE would allow for the generation of an index by generating an index which includes data for a measure aggregated according to the attributes specific to the data type. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to have indexes available for an arithmetic operation to be performed upon, and the resulting data to be aggregated thereafter.

10. Regarding **dependent claim 6, 13, and 19**, HILL, in combination with LORE, discloses a method comprising of storing (also memory and computer executable instructions for) the first cache and the second cache {See HILL, col. 1, lines 6-10, wherein this reads over “[t]he present invention relates to the field of computer programming, and more particularly to a method, system, and computer readable code for creating and using a structured cache”; col. 1, lines 14-16, wherein this reads over

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“[caching] involves storing data”; and col. 9, lines 33-35, wherein this reads over “the present invention stores the retrieved data into the data cache”}.

HILL discloses the creation of a cache after having retrieved a data set. It would have been obvious to one of ordinary skill in the art at the time the invention was made that the created cache would be stored on some memory as disclosed in HILL. Thus, the combination of the inventions disclosed in HILL and LORE would allow for the storing of cache in memory. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to store the cache and to have the cache accessible for the arithmetic operations and generation of indexes.

11. Regarding **dependent claim 7**, HILL, in combination with LORE, discloses a method comprising receiving a request to calculate {See LORE, col. 2, lines 30-31, wherein this reads over “[u]sers may specify a list of cross products for which they desire aggregations”} the measure expression {See LORE, col. 1, lines 28-30, wherein this reads over “[e]ach fact record in the fact table would contain a foreign key to join to each dimension and a list of measures which represents the transactional data”} over the selected range {See LORE, col. 8, lines 36-54, wherein this reads over “a level rule [wherein] an aggregate record will be generated for each distinct combination of brand, manufacture, and price with a category of ‘food’”} of attributes {See LORE, col. 1, lines 25-28, wherein this reads over “[e]ach dimension is a table where each record contains a key to uniquely identify each entity and a list of attributes”}.

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LORE discloses the cross product of levels used to aggregate data. Thus, the combination of the inventions disclosed in HILL and LORE would allow for the reception of a request to calculate a measure expression. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by HILL by combining it with the invention disclosed by LORE.

One of ordinary skill in the art would have been motivated to do this modification in order to calculate the relationship between certain measures.

12. Regarding **independent claim 8**, HILL, in combination with LORE, discloses:

A system for calculating a measure expression over a selected range of attributes, the measure expression including relationship between a first measure and a second measure, the first measure corresponding to a first data type and the second measure corresponding to a second data type, the relationship defined by an arithmetic operation, the system comprising:

a database for storing a first data table including data for the first data type and a second data table including data for the second data type {See HILL, col. 1, lines 47-49, wherein this reads over “[w]hen objects are persisted using a relational database, the various classes of objects typically correspond to separate tables in the database”};

a processor for performing the following steps {See HILL, col. 6, lines 28-29, wherein this reads over “[t]he workstation 10 includes a microprocessor; and col. 8, lines 3-4, wherein this reads over “[t]he user’s computer may be any type of computer processor”};

retrieving from the first data table a first cache corresponding to the first data type, the first cache including data for the first measure over the selected range of attributes {See above rejection of claims 1 and 14};

generating a first index from the first cache, the first index including data for the first measure over the selected range of attributes common to the first data type and the second data type {See above rejection of claims 1 and 14};

retrieving from the second data table a second cache corresponding to the second data type, the second cache including data for the second

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measure over the selected range of attributes {See above rejection of claims 1 and 14};

generating a second index from the second cache, the second index including data for the second measure over the selected range of attributes common to the first data type and the second data type {See above rejection of claims 1 and 14};

performing the arithmetic operation on the data for the first measure from the first index and the data for the second measure from the second index to achieve resulting data {See above rejection of claims 1 and 14}; and

aggregating the resulting data over the selected range of attributes common to the first data type and the second data type {See above rejection of claims 1 and 14}.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Kim whose telephone number is (571) 272-2737.

The examiner can normally be reached on M-F, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SAM RIMELL
PRIMARY EXAMINER